ILLUSTRATIONS OF ARCHITECTURAL SHADOWS.

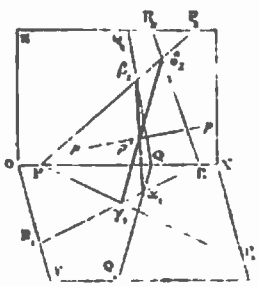

Fig. 8.

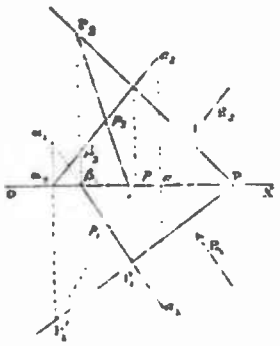

Fig. 9.

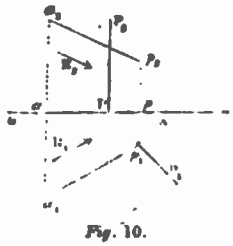

Fig. 10.

Fig. 13.

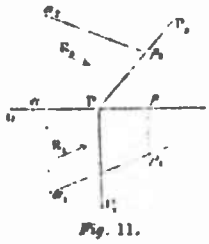

Fig. 11.

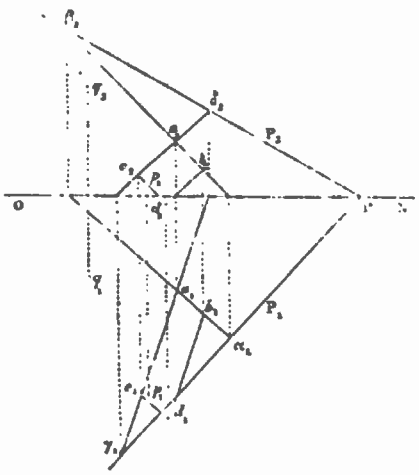

Fig. 12.

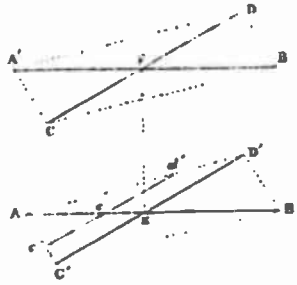

Fig. 14.

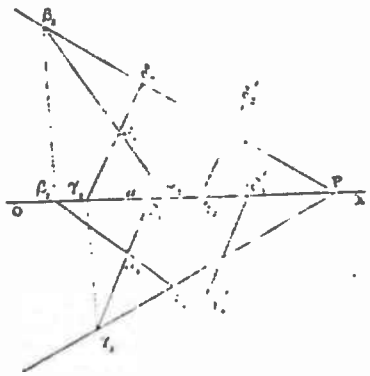

Fig. 15.

Mr. Gwilt remarks (pp. 2, 3,) that "in architectural drawings it is *usual* and *convenient* to project the shadows at an angle of 45°, with the horizontal as well as the vertical planes; because then the width of the shadow marks the actual projections and recessions on the plan." This, in other words, is the same thing as taking R_1, R_2, so as to make angles of 45° with the ground line OX in our fig. 7, p. 379. Keeping this in view, the architectural student will find no difficulty in following *with his understanding* the majority of examples in the "*Sciography*" which relate to the case of the shadows being projected on the plan and elevation.

I must be allowed to make one remark, however, on the universal selection of this mode of shading. It does no doubt effect the purpose mentioned by Mr. Gwilt, of marking "the projections and recessions on the plan;" and under this aspect, whilst it is *usual*, it also becomes *convenient*: but on the other hand it often represents buildings with an appearance under which *they never can be seen when erected*, and a false impression is thereby made as to the ultimate effect of an intended building. To the architect himself the information thus conveyed is unnecessary, since his plan contains the same fact, and it is scarcely dealing fairly with his employer for him to give a representation which can never be realized in the building which it is proposed to construct. Whatever be the aspect of a structure, its shading should be given for the time of the day when it is likely to be most generally seen, and possibly the composition of a design might be advantageously modified from a first conception by some degree of attention to this rule. As far, indeed, as ecclesiastical structures are concerned, the uniformity of their bearings, east and west, renders this system of shading always applicable; but in civil structures the circumstances of their sites render it impossible to comply with the conditions under which such a system of shading appears to me to be eligible. I, however, throw out this hint with some diffidence; and shall not be surprised to find that it is rejected by architectural authorities. Yet, I would deprecate its rejection without due consideration; and still more its rejection by men whose only reason for condemnation is their ignorance of any general rules for shading and shadowing.

The mode of introducing the subject of shadows by Mr. Gwilt needs no comment from me; except that it should fail to give the student any clear idea of the *reason* for the processes which follow it, does not with me create surprise. It is inadequate both in respect to reason and illustration; and this has been one of my main motives for writing this short series of papers on the mathematical principles of shadows.

No English writer on this subject ought to omit a proper reference to Nicholson, or withhold a due encomium on his merits. The great drawback, however, on the value of his works in general is, a certain inconsecutiveness in laying down first principles, and a frequent absence of all of anything bearing even the form of a reason for the process which he gives. On the doctrine of shadows his directions are often general, and perfectly correct; whilst, most unaccountably, in his engravings only the "usual and convenient" cases are figured. To the student who has mastered the reasoning of my previous paper, there still, I apprehend, can be no difficulty in following any case laid down in any of Nicholson's writings, where the projection is confined to the plan and elevation.

VI. (*Fig.* 8.) A point and a plane are given, the former by its projections, and the latter by its traces, and the pattern-ray is given as before by its projections: to find the plan and elevation of the shadow which the point casts upon the plane.

As in (V.) the shadow line will pass through the given point parallel to the pattern-ray, and its projections can be constructed as there explained. The problem, as one of descriptive geometry, is therefore reduced to that of finding the intersection of this line with the given plane.

The preliminary theorems upon which the construction rests are extremely simple, and with the aid of the annexed eidograph of the system, they will be intelligible and obvious from their enunciations only.

In *fig.* 8, let pp' be the line of shadows, and P_1P, PP_2 the traces of the plane upon which the shadow falls, on the horizontal and vertical planes respectively. Then,

(*a.*) If a line $\alpha_1\beta_2$ (or $\gamma_1\delta_2$) be in the plane, P_1PP_2, its traces, α_1, β_2 (or γ_1, δ_2) will be in the traces P_1P, PP_2 respectively of the plane; and conversely, if the traces of the plane pass through the traces of the line, the line and plane coincide.

(*b.*) If two planes intersect, their traces intersect in the traces of their line of mutual section.

(*c.*) If the line pp' meet the plane P_1PP_2, and a plane, Q_1QQ_2, be drawn through it to cut P_1PP_2, then the line $\alpha_1\beta_2$ will pass through p' the intersection of the line pp' with the plane P_1PP_2.

(*d.*) If *any* two arbitrary planes, Q_1QQ_2 and R_1RR_2 pass through pp', their intersections, $\alpha_1\beta_2$ and $\gamma_1\delta_2$, will give the point p', in which the line pp' and plane P_1PP_2 intersect.

ANALYSIS.—*Fig.* 9. Put a_1, a_2 for the projections of the point, R_1, R_2 for the projections

To learn about PDF Compression and OCR visit our website